

# CLAIMS

What is claimed is:

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1. A two-way communication system for providing universal multimedia applications including voice calls over Internet Protocol, comprising at least:  
a Broadband Residential Gateway coupled to a plurality of customer premises equipment and to a Hybrid Fiber Coaxial network,  
10 a Head End Hub comprising:  
a Cable Modem Bank coupled to an Edge Router and to a Head End, the Edge Router, coupled to the Cable Modem Bank and to a High Speed Packet Network,  
15 wherein the Head End Hub is coupled to the Hybrid Fiber Coaxial network and to a High-Speed Packet Network,  
the High Speed Packet Network coupled to the Head End Hub and to an Internet Protocol Central Office, and  
the Internet Protocol Central Office, coupled to the High Speed Packet Network and to an external network.  
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2. The two-way communication system of claim 1 wherein the plurality of customer premises equipment includes at least one of: a television, a telephone and a personal computer.
- 25 3. The two-way communication system of claim 1 wherein the external network is a public switched telephony network with a Signaling System Seven and an Operation, Administration, Maintenance and Provisioning system.
- 30 4. The two-way communication system of claim 1 wherein the external network of claim 3 wherein the public switched telephony network includes a billing system.

5. The two-way communication system of claim 1 wherein the High Speed Packet Network is coupled to an Internet Protocol Local Number Portability database that is coupled to a plurality of Ultra Highspeed Routers.

6. The two-way communication system of claim 5 wherein the High Speed Packet Network is coupled to a Local Service Management System.

7. A two-way communication system for providing voice calls using Internet Protocol, comprising at least:

an Internet Protocol Central Station, coupled to the a public switched telephony network, Internet and to a plurality of Customer Premises Equipment CPE via at least one High-Speed Packet Network coupled to a Hybrid Fiber Coaxial Distribution Network, the High-Speed Packet Network having a plurality of Ultra High-speed Routers coupled to the Hybrid Fiber Coaxial Distribution Network, and the Hybrid Fiber Coaxial Distribution Network being coupled to a Broadband Residential Gateway of the CPE that interconnects a plurality of Customer Premises Equipment, wherein voice calls are transmitted over the system in packets formatted in accordance with Internet Protocol.

8. The two-way communication system of claim 7 wherein the plurality of customer premises equipment includes at least one of: a television, a telephone and a personal computer.

9. The two-way communication system of claim 7 wherein the public switched telephony network utilizes a Signaling System Seven and an Operation, Administration, Maintenance and Provisioning system.

10. The two-way communication system of claim 7 wherein the public switched telephony network further includes a billing system.

11. A method for providing a two-way communication system for a voice call formatted using Internet Protocol, comprising the steps of:

using an Internet Protocol Central Station, coupled to the a public switched telephony network, Internet and to a plurality of Customer Premises Equipment CPE via at least one High-Speed Packet Network coupled to a Hybrid Fiber Coaxial Distribution Network, to encode a voice call to form IP encoded voice packets in accordance with the Internet Protocol and transmit said IP encoded voice packets on the High-Speed Packet Network using an Ultra High-speed Router coupled to the Hybrid Fiber Coaxial Distribution Network, wherein the Hybrid Fiber Coaxial Distribution Network is coupled to a Broadband Residential Gateway BRG of the CPE that interconnects a plurality of Customer Premises Equipment, and the BRG decodes the IP encoded voice packets to form a voice call and sends the voice call to a telephone.

12. The method of claim 11 wherein the plurality of customer premises equipment includes at least one of: a television, a telephone and a personal computer.

13. The method of claim 11 wherein the public switched telephony network includes a Signaling System Seven and an Operation, Administration, Maintenance and Provisioning system.

14. The method of claim 11 wherein the public switched telephony network further includes a billing system.

15. A two-way communication system for providing at least one of: voice, video, data and multimedia over Internet Protocol, comprising at least:  
a Broadband Residential Gateway coupled to a plurality of customer premises equipment and to an Internet Protocol Capable Network,

a Head End Hub comprising:

a Cable Modem Bank coupled to an Edge Router and to a Head End,  
the Edge Router, coupled to the Cable Modem Bank and to an Internet  
Protocol Network wherein the Head End Hub is coupled to the Internet  
Protocol Capable Network and to the Internet Protocol/High Speed Packet  
Network,

the Internet Protocol/High Speed Packet Network coupled to the Head End Hub  
and to an Internet Protocol Central Office, and

the Internet Protocol Central Office, coupled to the Internet Protocol/High Speed  
Packet Network and, where selected, to an external network.

16. The two-way communication system of claim 15 wherein the plurality of customer premises  
equipment includes at least one of: a television, a telephone and a personal computer.